Remarks/Arguments:

Claims 5-28 are currently pending in the present application, in which claim 7 is currently amended to correct a discovered informality. No new matter is introduced.

The Office Action dated October 7, 2005 rejected claims 5 and 6 under 35 U.S.C. § 102(e) as anticipated by *Foschini et al.* (U.S. Patent No. 6,763,073 B2), claims 7-12, 14-19, 21, 22, 24, 25, 27, and 28 under § 103(a) as obvious over *Nagatani* (U.S. Pub. No. 2003/0067904 A1) in view of *Gerlach et al.* (U.S. Patent No. 5,471,647), and claims 13, 20, 23, and 26 under § 103(a) as obvious over *Nagatani* in view of *Gerlach et al.* and further in view of *Foschini et al.*

Applicant respectfully traverses the rejections on the merits for the reasons proffered below.

Independent claim 5 recites "generating the feedback information **based on prediction of future propagation measurements**." To satisfy this feature, the Office Action, on page 2, refers to Figs. 1 and 2, col. 3, line 48 – col. 4, line 47 of *Foschini et al.* Applicant respectively submits that *Foschini et al.* provides no such disclosure. Instead, *Foschini et al.*, col. 4: 4-24, states the following (Emphasis Added):

> The selection of transmitter antennas is then somewhat optimized based on information provided by receiver 200 to transmitter 100 via the feedback channel (represented in FIG. 1 by the dashed line.) Transmitter processor 100, more particularly, may be arranged to initially match the sequential order in which symbols are generated with the order of antennas 110-1 through 110-k, in which the first of such symbols is transmitted over antenna 110-1, the second symbol is then transmitted over antenna 110-2, and so on. If that selection turns out to be inferior based on the receiver feedback information, then transmitter processor 100 may change the selection or use a subset of the transmit antennas 110-l, all in accordance with an aspect of the invention. For example, as a result of such feedback, **if the transmitter "learns" that the environment of the channel over which antennas 110-k-1 and 110-k transmit, then processor 100 may use just a subset of the antennas**, e.g., 110-1 through 110-k-2, and select those antenna that may possibly result in the best reception at receiver 200 as reported via the feedback channel.

The above passage, at best, describes use of a feedback channel in general terms. In fact, the feedback information is used to "learn" the present environment. Therefore, there is no support for "generating the feedback information **based on prediction of future propagation measurements**." Further, *Foschini et al.* discloses this learning process merely follows the conventional learning technique (col. 6: 59-67).

In further support of this anticipation rejection, the Office Action refers to an "estimated signal," (page 2, item 2), presumably for a teaching of "**prediction of future propagation measurements**." This interpretation has no support within *Foschini et al.* However, within the cited passage of col. 3, line 48 – col. 4, line 47, the only mention of any estimate is that of the m QAM components of the vector q(t). In the context of the claim, these components have no relevance to the "**prediction of future propagation measurements**."

As anticipation requires the disclosure of each element of the claim under consideration to be in a single prior art reference, Applicant respectfully submits that independent claim 5, along with claim 6 depending thereform, is not anticipated by *Foschini et al.*

With regard to the § 103(a) rejection of claims 7-12, 14-19, 21, 22, 24, 25, 27, and 28, Applicant respectfully submits that the Examiner has not established a *prima facie* case of obviousness. A prior art reference must be considered in its entirety, i.e., as a whole, including portions that would lead away from the claimed invention. ***W.L. Gore & Associates, Inc. v. Garlock, Inc.***, 721 F.2d 1540, 220 USPQ 303 (Fed. Cir. 1983), *cert. denied*, 469 U.S. 851 (1984).

Independent claims 7, 14, 21, 24 and 27, each recites "wherein the first pilot signal and the second pilot signal **are identical**." The Office Action, on page 3, item 4, asserts that this feature is taught by *Nagatani et al.*, citing Figs. 9 and 10 along with paragraphs [0075] and [0076]. Applicant respectfully submits that in fact *Nagatani et al.* teaches away this claimed feature. *Nagatani et al.* states the following (Emphasis Added):

> [0075] **Unless the signal-point position vectors** of the spread-spectrum modulated signals of respective channels **are shifted in phase, the pilot signals will be the same** on each of the channels and the output timings of the pilot signals on each of the channels will be identical. As a consequence, the power of the signal (the output signal of the code-multiplexed signal generator 52) obtained by code-multiplexing the spread-spectrum modulated signals of respective channels will develop peak values at the pilot signal portions, **these peak portions will produce interference in other stations and the power efficiency of the power amplifier will decline**.
>
> [0076] Accordingly, **the phase shifter** 65 in the spread-spectrum modulating unit 51.sub.1-51.sub.n **of each channel shifts, by a predetermined angle channel by channel, the phase of the signal-point position vector** of the spread-spectrum modulated signal of each channel. For example, the phase shifter 65 of an ith channel makes the phase-shift angle .theta. of the ith channel equal to 360.degree..multidot.i/N and phase-shifts the position vector by an amount equivalent to this phase-shift quantity .theta., where N represents the number of channels. Alternatively, the phase shifter 65 of each channel stores amount of

> phase shift in correspondence with spreading codes, obtains an amount of phase shift that conforms to the spreading code used in spread-spectrum modulation and rotates the signal by an amount equivalent to the phase-shift quantity. If this arrangement is adopted, the phases of the pilot signal portions of the spread-spectrum modulated signals output by the spread-spectrum modulators 51.sub.1-51.sub.n of the respective channels will be shifted relative to one another, **thus making it possible to suppress the peak values of the code-multiplexed signal, reduce the power of interference waves and raise the power efficiency of the transmitting power amplifier** 56. In this case, the phases of the signal-point position vectors of the spread-spectrum modulated signals may be shifted by a prescribed angle with regard to all transmission data and pilot signals, or the phases of the position vectors of the spread-spectrum modulated signals may be shifted by a prescribed angle with regard solely to the pilot signals.

In view of the above description, the *Nagatani et al.* system teaches away from the use of identical pilot signals, as it is desirable to introduce phase-shifts to achieve different pilot signals. For example, Figs. 9 and 10 also show differentiated pilot signals by providing a column in which the pilot signal of each discrete channel has a distinctly different phase angle. Corresponding textual support for Figs. 9 and 10 is provided by paragraphs [0100] and [0102], respectively. Paragraph [0100] specifically recites, "Fig. 9 illustrates control of phase rotation through the angles 0, $\pi/2$, π, $3\pi/2$ given by Equation (1), applied solely to the pilot signal portions of the spread-spectrum modulated signal, while paragraph [0102] declares, "Fig. 10 illustrates control of phase rotation through the angles θ_0-θ_{N-1} given by Equation (4), applied solely to pilot signal portions of the spread-spectrum modulated signal." Thus, *Nagatani et al.* teaches away from the use of a first and second pilot signal that is "identical" as positively recited in the claims.

The addition of *Gerlach et al.* does not cure the deficiency of *Nagatani et al.*, as the reference is applied merely for a supposed teaching of "determining weights." (Office Action, page 3). In particular, *Gerlach et al.* expressly recites, "a method is disclosed for using feedback to minimize cross-talk among **different** transmitted signals." (col. 2, lines 41-43) (emphasis added). Moreover, the applied art is devoid of any reference to pilot signals.

Thus, a *prima facie* case of obviousness has not been established. Accordingly, Applicant respectfully request withdrawal of the obviousness rejection and urges the indication that claims 7-12, 14-19, 21, 22, 24, 25, 27, and 28 are allowable.

As for the obviousness rejection of dependent claims 13, 20, 23, and 26 over *Nagatani* in view of *Gerlach et al.* and further in view of *Foschini et al.*, Applicant asserts that the combination is

impermissible, as explained with respect to the obviousness rejection over the *Nagatani* and *Gerlach et al.* Hence, claims 13, 20, 23, and 26 should be indicated as allowable.

Applicant submits that all pending claims are now in condition for allowance. A Notice of Allowance is respectfully requested.

Respectfully submitted,

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